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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,993	07/08/2003	Bryan E. Bloodworth	TI-35566	8156

7590 08/12/2005

EXAMINER
NEGRON, DANIELL L

ART UNIT	PAPER NUMBER
2651	

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DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,993	BLOODWORTH ET AL.	
	Examiner	Art Unit	
	Daniell L. Negrón	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12-15 and 23* is/are allowed.

6)☒ Claim(s) *16-20* is/are rejected.

7)☒ Claim(s) *21 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 16 and 17 are objected to because of the following informalities:

Claims depend from cancelled claim 11, claims 16 and 17 cannot depend from a cancelled claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 16, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramalho et al U.S. Patent No. 5,841,603 in view of Leighton et al U.S. Patent No. 6,285,221 and further in view of Applicant's admitted prior art.

Regarding claim 16, 17, and 18, Ramalho et al discloses a preamplifier, comprising a common mode generator (Fig. 5) an H-bridge circuit (Fig. 1) a current mirror (14, 26, 30, and 38) coupled to the common mode generator and to the H-bridge circuit, a first write head connection node (6) adapted to produce a first write signal (i.e. first value of information signal U_i) wherein the first write head connection node is coupled to the H-bridge circuit and a second write head connection node (8) adapted to produce a second write signal (i.e. second value of information signal U_i), wherein the second write head connection node is coupled to the H-bridge circuit wherein the common mode generator is adapted to provide current wherein the current is adapted to establish a voltage across the first write head connection node and the

second write head connection node, wherein the voltage is adapted to be pulled toward a first polarity based on the first write signal and toward a second polarity based on the second write signal and wherein the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage (column 10, lines 49-60).

Ramalho et al further inherently discloses a preamplifier comprising a digital to analog converter since a converter is considered necessary to change digital information signals received by the preamplifier such as 1's and 0's into the analog signals needed to adapt the write head to record data onto a medium.

Ramalho et al further discloses a first current source coupled to the common mode generator (see Fig. 6 and disclosure thereof).

Ramalho et al further inherently discloses a preamplifier comprising a digital to analog converter since a converter is considered necessary to change digital information signals received by the preamplifier such as 1's and 0's into the analog signals needed to adapt the write head to record data onto a medium.

Ramalho et al however fail to show an overshoot system coupled to the current mirror and the H-bridge circuit or the first current source being programmable.

However, Leighton et al disclose a preamplifier coupled to the H-bridge circuit of a write drive used for the purpose of controlling the overshoot of a write current and suppressing ringing in the driver circuit (column 2, lines 11-18 and column 6, lines 41-55).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the preamplifier as disclosed by Ramalho et al with the

teachings of an overshoot circuit taught by Leighton et al in order to obtain a writer driver circuit wherein increased data density capability is obtained and ringing is suppressed.

Although Ramalho et al and Leighton et al fail to show a first current source being programmable; it is considered well known in the art as disclosed and/or admitted by the Applicant in the specification of the present application (paragraph 6) that in order to provide a common-mode voltage, a programmable current source is needed. Therefore it is considered that the combination of the references meets the limitations of the Applicant's invention as claimed.

4. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramalho et al U.S. Patent No. 5,841,603 in view of Leighton et al U.S. Patent No. 6,285,221.

Regarding claim 19 and 20, Ramalho et al discloses a preamplifier, comprising a common mode generator (Fig. 5) an H-bridge circuit (Fig. 1) a current mirror (14, 26, 30, and 38) coupled to the common mode generator and to the H-bridge circuit, a first write head connection node (6) adapted to produce a first write signal (i.e. first value of information signal U_i) wherein the first write head connection node is coupled to the H-bridge circuit and a second write head connection node (8) adapted to produce a second write signal (i.e. second value of information signal U_i), wherein the second write head connection node is coupled to the H-bridge circuit wherein the common mode generator is adapted to provide current wherein the current is adapted to establish a voltage across the first write head connection node and the second write head connection node, wherein the voltage is adapted to be pulled toward a first polarity based on the first write signal and toward a second polarity based on the second write signal and wherein the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage (column 10, lines 49-

60).

Ramalho et al further discloses a first current source coupled to the common mode generator (see Fig. 6 and disclosure thereof).

Ramalho et al however fail to show a second current source coupled to an overshoot system further coupled to the current mirror and the H-bridge circuit.

However, Leighton et al disclose a preamplifier for providing a signal to the load terminals of a the H-bridge circuit of a write driver (column 2, lines 9-31) used for the purpose of controlling the overshoot of a write current and suppressing ringing in the driver circuit (column 2, lines 11-18 and column 6, lines 41-55).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the preamplifier as disclosed by Ramalho et al with the teachings of an overshoot circuit taught by Leighton et al in order to obtain a writer driver circuit wherein increased data density capability is obtained and ringing is suppressed.

Allowable Subject Matter

5. Claims 12-15 and 23 are allowed.

Regarding claims 12 and 23, claim 12 recites a preamplifier comprising an overshoot system coupled to a current mirror and an H-bridge circuit, a first write head connection node adapted to produce a first write signal, wherein a first current source is coupled to a common mode generator and is adapted to provide current; wherein the current is adapted to establish a voltage across the first write head connection node and the second write head connection node, the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage and the first current source supplies current

to the current mirror when the first current source is at a maximum level, which is neither taught or an obvious variation of the prior art.

Regarding claim 13-15, claim 13 recites a preamplifier comprising an overshoot system coupled to a current mirror and an H-bridge circuit, a first write head connection node adapted to produce a first write signal, wherein a first current source is coupled to a common mode generator and is adapted to provide current; wherein the current is adapted to establish a voltage across the first write head connection node and the second write head connection node, the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage and the first current source supplies current to the common mode generator when the first current source is not at a maximum level, which is neither taught or an obvious variation of the prior art.

6. Claims 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Upon further consideration, the indicated allowability of claims 18 and 19 is withdrawn in view of the reference discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniell L. Negrón whose telephone number is 571-272-7559. The examiner can normally be reached on Monday-Friday (8:30am-5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN
August 5, 2005

K. Wong
Primary Examiner
for SPE D. Hudspeth